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## *A DESCRIPTIVE ANALYSIS OF PATIENT ENCOUNTER DATA FROM THE FLEET HOSPITAL 5 HUMANITARIAN RELIEF MISSION IN HAITI*

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**A Descriptive Analysis of Patient Encounter Data from the Fleet Hospital 5  
Humanitarian Relief Mission in Haiti**

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## SUMMARY

### **Problem**

Military planners and logisticians determine medical requirements by projecting the number of casualties that can be expected in a given combat scenario. Presently, the Deployable Medical Systems (DEPMEDS) program is used to project, assemble, and deploy the supplies, equipment, and personnel needed for a given combat mission. However, in recent years there has been a shift in US military strategy resulting in an increase in military operations other than war (MOOTW). Since this trend is likely to continue, it is important to update Department of Defense medical planning tools to account for MOOTW, such as humanitarian assistance, peacekeeping, and disaster relief.

### **Objective**

This report describes the patient demographics, type of medical encounter, diagnoses, and medications provided by medical personnel of Fleet Hospital 5 (FH5) during a humanitarian assistance operation in Haiti. Results are presented for clinics, which provided humanitarian relief to Haitian civilians, and for the fleet hospital, which was a treatment facility for US and United Nations military personnel. These data can be used by medical planners to determine MOOTW requirements in the post-Cold War era.

### **Approach**

Patient encounter data, including type of medical encounter, diagnoses, and medications prescribed, were collected for Haitian civilians who visited FH5 clinics and for military personnel who were treated at the fleet hospital. These data were encoded and entered into a database. The data were analyzed to provide descriptive information about the FH5 humanitarian relief mission in Haiti.

### **Results**

The database consists of 10,568 records, each representing one patient encounter. The results are presented as descriptive frequencies and/or percentages. The 10,215 Haitian clinic patients were seen at 22 different sites between April 4 and August 5, 1997. Over three fifths (61.6%) were women, and children aged 1 to 10 years were the most frequent age category. Additionally, 353 US military and UN personnel were treated at the fleet hospital during the same period. Men represented 81% of patients, and those who were 21 to 50 years of age were seen most often. The most frequent type of patient encounter was a medical diagnosis based on the International Classification of Diseases, 9<sup>th</sup> Revision, Clinical Modification, representing 92.6% of clinic visits and 92.2% of fleet hospital visits. Infectious and parasitic diseases were diagnosed once in every four clinic visits. Injury cases were the most frequent (23.1%) at the fleet hospital.

### **Conclusion**

The resulting database, with the descriptive statistics that it generated, is a first step toward fulfilling the Medical Readiness Strategic Plan-2004 objective of preparing for and maintaining readiness for MOOTW. Future areas of research for MOOTW medical planning should include the development of denominator data so that rates of occurrence for illnesses and injuries can be established for humanitarian relief as well as other MOOTW scenarios. Comparisons between different types of MOOTW also would provide useful information.

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# **A Descriptive Analysis Of Patient Encounter Data From The Fleet Hospital 5 Humanitarian Relief Mission In Haiti**

## **INTRODUCTION**

To determine supply, equipment, skill, and personnel requirements for military medical operations, planners and logisticians project types and occurrence rates of battle injuries and diseases likely to be encountered by US forces in a designated combat theater. In 1985 the joint services launched Deployable Medical Systems (DEPMEDS), a modular system designed to facilitate such medical resource planning. DEPMEDS projects medical requirements, then allocates sufficient supplies, equipment, and personnel to provide treatment to an anticipated array of casualties falling within 319 patient conditions.<sup>1</sup>

Presently, these patient conditions describe medical conditions that would be seen during a combat scenario. In recent years, however, US defense policies have been modified. The Medical Readiness Strategic Plan-2004 (MRSP-2004) was initiated in 1998 as a response to changes in the global political situation. Since the late 1980s, there has been an increasing trend toward the use of US forces for military operations other than war (MOOTWs). MRSP-2004 has been implemented to define and clarify joint doctrine in regard to MOOTW, specifically addressing issues such as medical missions, roles, and functions. A new objective for the Military Health Services System, to "prepare for and maintain readiness for MOOTW," was added to the primary and secondary missions of supporting deployed US forces and providing beneficiary care. Recent years have seen US forces on peace enforcement missions in Bosnia, peacekeeping missions in Zagreb, noncombatant evacuation operations in Liberia, disaster relief in Rwanda, and humanitarian assistance in Somalia.<sup>2</sup>

## **BACKGROUND**

Haiti is an island republic in the West Indies with a population of approximately 6.7 million. Haitians have one TV for every 208 persons and one telephone for every 119 people. With a literacy rate of 53% and a per capita income of \$400 per year, it is the poorest country, economically, in the Western Hemisphere. As of 1998, a Haitian man had a life expectancy of 47 years, while a woman could expect to live to the age of 51. There was one physician for every 10,041 persons, with 994 persons to fill each hospital bed, and the infant mortality rate was 102 per 1,000 live births.<sup>3</sup>

Fleet Hospital 5 (FH5) is a naval unit based at the Naval Hospital in Bremerton, Washington. In February, 1997 personnel assigned to FH5 arrived in Haiti to relieve Alpha Surgical Company, 2<sup>nd</sup> Medical Battalion, Camp Lejeune. This US military complement was tasked with providing humanitarian relief for the Haitian populace, and it operated separately from the United Nations (UN) peacekeeping force in Haiti. FH5 had the capability to provide internal medicine, family practice, general surgery, orthopedics, and dentistry care for the Haitian people. During their deployment, FH5

personnel fulfilled a dual role. First, they traveled from the slums of Port-au-Prince to the countryside, setting up clinics to deliver medical care to Haitian civilians. Second, they staffed the fleet hospital, located within the military compound known as Camp Kinzer, that was a medical treatment facility for US military personnel and UN forces.

## **OBJECTIVE**

This report describes the patient demographics, type of medical encounter, diagnoses, and medications provided by medical personnel of Fleet Hospital 5 (FH5) during a humanitarian assistance operation in Haiti. Results are presented for clinics, which provided humanitarian relief to Haitian civilians, and for the fleet hospital, which was a treatment facility for US and United Nations military personnel. These data can be used by medical planners to determine MOOTW requirements in the post-Cold War era.

## **METHOD**

Medical personnel assigned to FH5 completed a Humanitarian Assistance Visit Record form for each patient seen in a clinic visit. The Visit Record format was free text, with spaces provided to record data. Demographic information included name, age, and sex. The type of visit, either first or follow-up, was recorded, along with patient status, defined as outpatient, inpatient, surgery, or dental. The form provided space for up to four diagnoses and their treatments. Space also was provided to record prescriptions. The Naval Health Research Center (NHRC) Abbreviated Clinical Record was completed for each patient encounter at the fleet hospital. In addition to demographic information, the patient's military status and nationality were recorded. Data describing the cause of injury were recorded where applicable. Examples of completed Humanitarian Assistance Visit Record and NHRC Abbreviated Clinical Record forms are shown in Appendix A.

The record forms, sorted by date and clinic site, were forwarded and converted into an electronic database. Inspection of the data sheets indicated that the free-text format was unsuitable for data entry. Illegibility, blank spaces, and inconsistency in medical terminology were some of the reasons why the raw data could not be transcribed directly. To standardize the data, a coding sheet (as seen in Appendix A) was developed to record the place and date of the patient encounter, the patient's age and sex, visit type, military or civilian status, nationality, up to four diagnoses using International Classification of Diseases, 9<sup>th</sup> Revision, Clinical Modification (ICD-9-CM) terminology<sup>4</sup>, medical procedures performed, applications used, medications prescribed, and referrals made. Identifying data such as patient name and identification number were not transcribed, although coding sheets were numbered for purposes of data verification. Encoded data were then entered into an Excel™ database.

Using Excel™ computer software, the database was sorted into clinic visits, where the local population was treated, and fleet hospital visits, where US military or UN personnel were treated. These two categories were further classified into initial or follow-up visits, and frequencies were tabulated for demographics, diagnoses, and medications prescribed. A cross-tabulation of diagnosis by medication also was performed.

## RESULTS AND DISCUSSION

The database consists of 10,568 records, each representing one patient encounter. The 10,215 Haitian civilian patients were seen at 22 different sites between April 4 and August 5, 1997. Additionally, 353 US military or UN personnel were treated at the fleet hospital during the same period. The results are presented as descriptive frequencies and/or percentages. Table 1 quantifies the initial and follow-up visits at clinics and the fleet hospital.

**Table 1. Initial and Follow-up Encounters at Clinics and the Fleet Hospital**

Type of Patient Encounter	Clinic	Fleet Hospital	Total
Initial Visit	9,940	254	10,194
Follow-up Visit	275	99	374
<b>Total Patient Encounters</b>	<b>10,215</b>	<b>353</b>	<b>10,568</b>

### Demographics

#### Clinics for Haitian Civilians

The distribution of clinic patients by age and sex is shown in Table 2. For initial visits, females aged 1 to 10 years were the largest group, followed by males aged 1 to 10. Thirty-one percent of initial clinic visits, in fact, were made by children in this age group. Except for two groups, infants of 9 to 11 months and older adults over 90 years, females

**Table 2. Age & Sex of Patients in Visits to Clinics**

Age	Initial Visits				Follow-up Visits				Grand Total
	F	M	Not Spec.	Total	F	M	Not Spec.	Total	
<1 yr. 1-4 mo.	129	100	6	235	0	1	0	1	236
5-8 mo.	168	160	4	332	2	2	0	4	336
9-11 mo.	35	44	4	83	0	2	0	2	85
1-10	1,618	1,425	22	3,065	9	14	2	25	3,090
11-20	914	438	8	1,360	13	21	0	34	1,394
21-30	1,350	456	12	1,818	26	30	0	56	1,874
31-40	824	314	5	1,143	16	43	0	59	1,202
41-50	455	196	3	654	13	16	0	29	683
51-60	248	149	2	399	1	15	0	16	415
61-70	156	102	0	258	1	11	0	12	270
71-80	69	46	0	115	0	11	0	11	126
81-90	31	12	0	43	0	9	0	9	52
91-100	2	8	0	10	0	0	0	0	10
Not specified	208	140	77	425	3	7	7	17	442
<b>Grand Total</b>	<b>6,207</b>	<b>3,590</b>	<b>143</b>	<b>9,940</b>	<b>84</b>	<b>182</b>	<b>9</b>	<b>275</b>	<b>10,215</b>



outnumbered males in each age category. This was particularly true among adults aged 21 to 30 years, where women outnumbered men by almost three to one. In follow-up clinic visits, however, males outnumbered females in all age groups, especially in adults aged 31-40 and in adults aged 51 and older.

**Fleet Hospital for US Military and UN Personnel**

Table 3 shows the age and sex of patients at the fleet hospital. Males outnumbered females in both initial and follow-up patient encounters, accounting for 80% of initial encounters and 84% of follow-up visits. The ages from 21 through 50 were most numerous. This is not unexpected, since the patient population was primarily military.

**Table 3. Age and Sex of Patients at the Fleet Hospital**

Age	Initial Visits				Follow-up Visits				Grand Total
	F	M	Not Spec.	Total	F	M	Not Spec.	Total	
<1	0	2	0	2	0	0	0	0	2
1-10	1	1	0	2	0	2	0	2	4
11-20	2	4	0	6	2	3	0	5	11
21-30	9	42	0	51	0	16	0	16	67
31-40	9	63	1	73	1	22	0	23	96
41-50	4	29	2	35	2	5	0	7	42
51-60	1	5	1	7	0	5	0	5	12
61-70	0	1	0	1	0	0	0	0	1
71-80	0	1	0	1	0	0	0	0	1
Not given	19	55	2	76	11	30	0	41	117
<b>Total</b>	<b>45</b>	<b>203</b>	<b>6</b>	<b>254</b>	<b>16</b>	<b>83</b>	<b>0</b>	<b>99</b>	<b>353</b>

The number of civilian and military patients treated in initial and follow-up visits to the fleet hospital is shown in Table 4, and the country or organization they represent is shown in Table 5. Of the 189 civilian patients, 105 were Haitians. Other civilians were from the United States and other countries; many of these were civilian employees of the United Nations. US personnel accounted for 146 of 155 of the military patients.

**Table 4. Military/Civilian Status of Patients at the Fleet Hospital**

Visit Type	Civilian	Military	Unknown	Total
Initial	125	124	5	254
Follow-up	64	31	4	99
<b>Total</b>	<b>189</b>	<b>155</b>	<b>9</b>	<b>353</b>

**Table 5. Nationality and Military/Civilian Status of Patients at the Fleet Hospital**

<b>Citizenship or Affiliation</b>	<b>Civilian</b>	<b>Military</b>	<b>Not Specified</b>	<b>Total</b>
USA	27	146	2	175
Haiti	105			105
Canada	13	8		21
Unknown	6		5	11
Panama	9		2	11
France	9			10
India	4			4
Algeria	4			4
WHO	3			3
Africa	2			2
Australia	2			2
Togo	2			2
Germany	1			1
Finland	1			1
Pakistan	1			1
<b>Total</b>	<b>189</b>	<b>155</b>	<b>9</b>	<b>353</b>

### **Diagnoses**

#### **Clinics: Initial Visits.**

Up to four diagnoses or interventions could be recorded for each patient encounter. Table 6 shows that for approximately half (50.5%) of initial visits, one diagnosis was recorded, and two to four were recorded for the remaining 49.5%, resulting in 16,775 diagnoses for 9,940 patient encounters.

**Table 6. Number of Interventions (Diagnoses) per Visit at Clinics**

<b>Interventions/Visit</b>	<b>No. Visits</b>	<b>Total</b>
1	5,016	5,016
2	3,285	6,570
3	1,367	4,101
4	272	1,088
<b>Total</b>	<b>9,940</b>	<b>16,775</b>

Table 7 quantifies the types of interventions that were made during patient visits. The term "interventions" is used here and in Table 13 because, technically, only ICD-9 findings are "diagnoses," while dental, preventive medicine, aftercare, "unknown," and "other" are medical interventions. The "unknown" interventions are those that were not specified or were illegible, while the "other" interventions were those that did not fit any other category, for example, when a patient was seen and counseled but no specific

diagnosis was made. ICD-9 diagnoses were by far the most frequent outcome of a patient encounter, accounting for 92% of all initial encounters.

**Table 7. Initial Patient Encounters at Clinics: Type of Intervention**

<b>Type of Intervention</b>	<b>Frequency</b>	<b>%</b>
ICD-9 Diagnosis	15,538	92.63
Dental	592	3.53
Preventive Medicine	448	2.67
Aftercare	97	0.58
Unknown	93	0.55
Other	7	0.04
<b>Total Interventions</b>	<b>16,775</b>	<b>100.00</b>

Table 8 ranks the ICD-9 classifications by frequency and shows that Infectious and Parasitic Diseases were diagnosed most often, about once in every four interventions. Table 8 also lists the most frequent sub-category diagnoses; for example, it can be seen that worms and scabies are the conditions that account for 69.32% of Infectious and Parasitic Diseases. Headaches and fevers comprised 58.58% of Signs, Symptoms and Other Ill-defined Conditions, while gastroesophageal reflux disorder (GERD) was

**Table 8. ICD-9 Diagnoses for Initial Visits to Clinics**

<b>ICD-9 Classification (brief title)</b>	<b>No. of Diagnoses</b>	<b>% of Total</b>	<b>Sub-category</b>	<b>No. of Diagnoses</b>	<b>% of Classification</b>
Infectious/Parasitic	3,886	25.01	<i>Worms</i>	1,656	42.61
			<i>Scabies</i>	1,038	26.71
Signs & Symptoms	2,052	13.21	<i>Headache</i>	736	35.87
			<i>Fever</i>	466	22.71
Digestive	2,011	12.94	<i>GERD</i>	614	30.53
Blood/Blood-forming	1,573	10.12	<i>Anemia</i>	1,572	99.94
Respiratory	1,433	9.22	<i>URI</i>	905	63.15
Musculoskeletal	912	5.87	<i>Pain</i>	436	47.81
Skin	881	5.67			
Nervous/Sensory	754	4.85			
Endocrine/Nutritional	727	4.68	<i>Malnutrition</i>	571	78.54
Genitourinary	456	2.93			
Injury & Poisoning	293	1.89			
Circulatory	228	1.47			
Pregnancy/Childbirth	190	1.22			
Neoplasms	90	0.58			
Congenital Anomalies	28	0.18			
Mental Disorders	24	0.15			
<b>Grand Total</b>	<b>15,538</b>	<b>100.00</b>			

diagnosed in 30.53% of Diseases of the Digestive System classification. Another notable sub-category diagnosis was anemia, which accounted for all but one Disease of the Blood and Blood-forming Organs. URI was the most commonly-diagnosed Disease of the Respiratory System, with 63.15% of diagnoses in that classification, and, under Diseases of the Musculoskeletal System, non-specific pain was diagnosed in nearly half the cases. Malnutrition was diagnosed frequently as a sub-category (n = 571) and accounted for 78.54% of Endocrine, Nutritional and Metabolic Diseases and Immune Disorders even though that major classification represented only 4.68% of the total number of diagnoses.

Tables 9, 10, and 11 present diagnostic breakdowns for Dental, Preventive Medicine, and Aftercare interventions at initial clinic visits. Toothaches, tooth decay, well-baby clinics and wound care were the most frequent sub-categories for patient encounters of these types.

**Table 9. Dental Diagnoses in Initial Clinic Encounters**

<b>Dental Diagnoses*</b>	<b>N</b>
Toothache	280
Tooth Decay	197
Other	94
Gum Disease	21
<b>Total</b>	<b>592</b>

**Table 10. Preventive Med. (PM) in Initial Clinic Encounters**

<b>PM Interventions</b>	<b>N</b>
Well Baby	261
Vitamins	108
Other	71
Immunization	8
<b>Total</b>	<b>448</b>

**Table 11. Aftercare in Initial Clinic Encounters**

<b>Aftercare Interventions</b>	<b>N</b>
Wound Care	54
Dressing Change	19
Medicine Refill	11
Other Aftercare	7
Sutures	6
<b>Total</b>	<b>97</b>

\* Sub-categories were entered for each dental patient encounter; however, the diagnosis given on the data form was often vague. In those cases, the subcategory was entered as "toothache" or "tooth decay."

### **Clinics: Follow-up Visits.**

There were 275 follow-up clinic visits, which resulted in 335 diagnoses. Table 12 shows that one diagnosis was recorded for 69% (n=231) of follow-up visits, while from two to four diagnoses were recorded for the remaining 31%. As seen in Table 13, ICD-9 diagnoses and aftercare interventions accounted for 97% of follow-up visits. There were 210 ICD-9 diagnoses and 115 aftercare interventions for a total of 325 of the 335 follow-up patient visits.

**Table 12. Number of Interventions per Follow-up Visit to Clinics**

<b>Interventions</b>	<b>No. Visits</b>	<b>Total</b>
1	231	231
2	33	66
3	6	18
4	5	20
<b>Total</b>	<b>275</b>	<b>335</b>

**Table 13. Follow-up Patient Encounters at Clinics: Type of Intervention**

<b>Type of Intervention</b>	<b>Frequency</b>	<b>%</b>
ICD-9 Diagnosis	210	62.69
Aftercare	115	34.33
Unknown	9	2.69
Dental	1	0.30
<b>Total Interventions</b>	<b>335</b>	<b>100.00</b>

Table 14 ranks the ICD-9 classifications as they were diagnosed in follow-up clinic visits, and the six most frequent ICD-9 sub-categories also are listed. This table shows that Injury and Poisoning was the most frequently-recorded major category. However, hernia was the most frequent ICD-9 sub-category, with 26 cases representing 72.22% of Digestive Diseases. Soft tissue wounds and minor injuries accounted for 80.43% of Injury & Poisoning diagnoses. Fifty percent of Infectious and Parasitic Diseases were classified as "other" conditions such as food poisoning and herpes zoster, and "other" genitourinary conditions such as dysmenorrhea, hydrocele, and calculus accounted for all but one Disease of the Genitourinary System. Anemia was diagnosed in all Diseases of the Blood and Blood-forming Organs. Aftercare interventions are shown in Table 15, where it can be seen that wound care, dressing changes and other aftercare procedures accounted for all but four aftercare follow-up visits. These interventions occurred more frequently, in fact, than any ICD-9 sub-category.

**Table 14. Breakdown of ICD-9 Diagnoses for Follow-up Visits to Clinics**

<b>ICD-9 Classification (brief title)</b>	<b>No. of Diagnoses</b>	<b>% of Total</b>	<b>Sub-category</b>	<b>No. of Cases</b>	<b>% of Classification</b>
Injury & Poisoning	46	21.90	<i>Soft Tissue</i>	22	47.83
			<i>Other Minor</i>	15	32.61
Digestive	36	17.14	<i>Hernia</i>	26	72.22
Skin/Subcutaneous	25	11.90			
Infectious/Parasitic	24	11.43	<i>Other</i>	12	50.00
Genitourinary	16	7.62	<i>Other</i>	15	93.75
Musculoskeletal	15	7.14			
Respiratory	14	6.67			
Blood/Blood-forming	11	5.24	<i>Anemia</i>	11	100.00
Neoplasm	9	4.29			
Circulatory	5	2.38			
Nervous/Sensory	4	1.90			
Endocrine/Nutritional	2	0.95			
Signs & Symptoms	2	0.95			
Congenital Anomalies	1	0.48			
<b>Total ICD-9 Diagnoses</b>	<b>210</b>	<b>100.00</b>			

**Table 15. Breakdown of Aftercare Interventions for Follow-up Visits to Clinics**

Aftercare Sub-category	No. of Cases	%
Wound Care	45	39.1
Dressing Change	39	33.9
Other Aftercare	27	23.5
Sutures	4	3.5
<b>Total Aftercare Interventions</b>	<b>115</b>	<b>100.0</b>

**Fleet Hospital: Initial Visits.**

As seen in Table 16, there were 254 initial visits to the fleet hospital, which resulted in a total of 294 interventions. Table 17 shows that most (n=271) were ICD-9 diagnoses, with aftercare and preventive medicine combining for an additional 23 interventions.

**Table 16. Number of Interventions per Initial Visit at the Fleet Hospital**

Interventions/Visit	No. Visits	Total Interventions
1	221	221
2	27	54
3	5	15
4	1	4
<b>Total</b>	<b>254</b>	<b>294</b>

**Table 17. Fleet Hospital Initial Visits: Type of Intervention**

Type of Intervention	Frequency	%
ICD-9 Diagnosis	271	92.18
Aftercare	19	6.46
Preventive Medicine	4	1.36
<b>Total</b>	<b>294</b>	<b>100.00</b>

Table 18 shows the frequencies for all interventions, including Aftercare and Preventive Medicine, along with the most frequent sub-categories. Injury and Poisoning accounted for 23% of initial fleet hospital visits, while the Musculoskeletal, Digestive, Respiratory, Infectious/Parasitic, Aftercare, and Skin/Subcutaneous categories together accounted for 60%. The remaining categories were diagnosed in 17% of interventions. Under "Sub-category," it can be seen that "other," mostly superficial injuries, sprains/strains, and lacerations/abrasions accounted for 89.7% of Injuries and Poisoning.

“Other” musculoskeletal disorders, such as derangement of the knee, and non-specific pain comprised 56.82% of Musculoskeletal diseases. More than one-third of Digestive diseases were diagnosed as diarrhea, and more than half of Respiratory diseases were upper respiratory infections. All but two Aftercare visits were for prescription refills.

**Table 18. Breakdown of Interventions for Fleet Hospital Initial Visits**

Intervention Category (brief title)	Frequency	% of Total	Sub-category	No. of Cases	% of Category
Injury & Poisoning	68	23.13	<i>Other minor</i>	25	36.76
			<i>Sprains/Strains</i>	22	32.35
			<i>Abrasion/Lacer.</i>	14	20.59
Musculoskeletal	44	14.97	<i>Other</i>	14	31.82
			<i>Pain</i>	11	25.00
Digestive	38	12.93	<i>Diarrhea</i>	13	34.21
Respiratory	31	10.54	<i>URI</i>	16	51.61
Infectious/Parasitic	26	8.84			
Aftercare	19	6.46	<i>Refills</i>	17	89.47
Skin/Subcutaneous	17	5.78			
Endocrine/Nutritional	9	3.06			
Nervous/Sensory	9	3.06			
Circulatory	6	2.04			
Symptoms & Signs	5	1.70			
Genitourinary	5	1.70			
Neoplasms	5	1.70			
Mental Disorders	4	1.36			
Preventive Medicine	4	1.36			
Pregnancy/Childbirth	2	0.68			
Blood/Blood-forming	1	0.34			
Congenital Anomalies	1	0.34			
<b>Total</b>	<b>294</b>	<b>100.00</b>			

**Fleet Hospital: Follow-up Visits.**

There were 99 follow-up visits at the fleet hospital, which resulted in a total of 105 diagnoses, as seen in Table 19. Seventy-five percent (n=79) were ICD-9 diagnoses, and the remaining 25% of the visits were for aftercare (n=24) or preventive medicine (n=2).

**Table 19. Number of Interventions per Fleet Hospital Follow-up Visit**

Interventions	No. Visits	Total
1	93	93
2	6	12
<b>Total</b>	<b>99</b>	<b>105</b>

The categories for follow-up visits to the fleet hospital are shown in Table 20, which shows the frequencies for all interventions, including aftercare and preventive medicine, along with the most frequent sub-categories. Injury/Poisoning, Aftercare, and Musculoskeletal Diseases accounted for nearly two-thirds of all fleet hospital follow-up interventions. The sub-categories for these follow-up visits fall mainly into the Injury/Poisoning and Aftercare classifications, where injuries were re-examined, sutures were removed, dressings were changed, and prescriptions were refilled.

**Table 20. Intervention Frequencies for Fleet Hospital Follow-up Visits**

<b>Intervention Category (brief title)</b>	<b>Frequency</b>	<b>% of Total</b>	<b>Sub-category</b>	<b>No. of Cases</b>	<b>% of Category</b>
Injury & Poisoning	30	28.6	<i>Other</i>	9	30.0
			<i>Abrasion/Lacer</i>	8	26.7
			<i>Fractures</i>	5	16.7
			<i>Sprain/Strain</i>	4	13.3
Aftercare	24	22.9	<i>Sutures</i>	8	33.3
			<i>Other</i>	8	33.3
			<i>Refill</i>	5	20.8
			<i>Dress Chg</i>	3	12.5
Musculoskeletal	13	12.4	<i>Other</i>	7	53.5
Respiratory	7	6.67	<i>URI</i>	5	71.4
Digestive	6	5.71			
Infectious/Parasitic	4	3.81			
Nervous/Sensory	3	2.86			
Genitourinary	3	2.86			
Symptoms & Signs	2	1.9			
Skin/Subcutaneous	2	1.9			
Blood/Blood-forming	2	1.9			
Circulatory	2	1.9			
Congenital Anomalies	2	1.9			
Preventive Medicine	2	1.9			
Endocrine/Nutritional	1	0.95			
Neoplasms	1	0.95			
Mental Disorders	1	0.95			
<b>Total</b>	<b>105</b>	<b>100</b>			

### **Prescriptions**

Table 21 briefly describes the nine medication categories that were used to classify prescriptions. A complete listing of the medications in these categories can be found in Appendix B.



**Table 21. Classification of Medications**

Group	Brief Title
1	Vitamins
2	Antibiotics
3	Anti-inflammatory
4	Anti-parasitic
5	Antacids
6	Fungicides
7	Cold
8	Other
9	Unknown

Prescription frequencies for clinics and the fleet hospital are shown in Table 22. Anti-inflammatory medications such as aspirin and Tylenol were prescribed most frequently. Overall, vitamins were prescribed in 19.15% of cases; however, they were seldom prescribed at the fleet hospital. Patients were less likely to receive a prescription at the fleet hospital, and when they did, it was more likely to be an anti-inflammatory, an "other" medication such as eye drops, or a cold remedy.

**Table 22. Types and Frequency of Prescriptions at Clinics and the Fleet Hospital**

Prescription Category	Clinics	Fleet Hosp.	Total	%
0-No prescription	1,947	138	2,085	11.52
3-Anti-inflammatory	3,985	111	4,096	22.63
1-Vitamins	3,461	5	3,466	19.15
4-Anti-parasitic	2,777	24	2,801	15.47
2-Antibiotics	2,141	33	2,174	12.01
8-Other	2,040	87	2,127	11.75
5-Antacid	1,757	9	1,766	9.76
7-Cold	1,139	42	1,181	6.52
6-Fungicide	479	10	489	2.70
9-Unknown	146	11	157	0.87
<b>Total</b>	<b>19,872</b>	<b>470</b>	<b>20,342</b>	<b>100.00</b>
<i>Less no prescription</i>	<i>-1,947</i>	<i>-138</i>	<i>-2,085</i>	
<i>Less prescription unk.</i>	<i>-146</i>	<i>-11</i>	<i>-157</i>	
<b>Total prescriptions</b>	<b>17,779</b>	<b>321</b>	<b>18,100</b>	

Table 23 lists the diagnostic categories along with the medications that were prescribed for them during clinic visits. Reading down the columns, it can be seen that while vitamins were prescribed in all categories, they were used most for Blood and Blood-forming Diseases such as anemia, and for Endocrine and Nutritional Diseases such as malnutrition. Antibiotics were prescribed most for respiratory and infectious diseases, but were also widely used to combat skin infections and, in Nervous System and Sense Organ disorders such as eye and ear infections. Anti-inflammatory medications were

prescribed most frequently for Symptoms, Signs, and Ill-defined Conditions such as fever of unknown origin and headaches. Anti-parasitic medications were prescribed most for Infectious and Parasitic Diseases, and in fact worms and parasites were the most frequent sub-category of this ICD-9 category. Antacids were used to alleviate Diseases of the Digestive System such as GERD and indigestion. Fungicides were prescribed most often for Infectious and Parasitic Diseases, particularly for scabies. Cold and allergy medications were prescribed to fight Diseases of the Respiratory System such as upper respiratory infections, and also for Symptoms, Signs, and Ill-defined Conditions such as coughs. "Other" medications were prescribed frequently in several ICD-9 categories. There was an outbreak of herpes zoster, an Infectious and Parasitic Disease, which was typically treated with acyclovir. Calamine and betadine were often prescribed for skin discomfort caused by rashes or secondary effects of scabies. The frequent "other" medications prescribed for Diseases of the Nervous System and Sense Organs were over-the-counter eyedrops or eardrops.

**Table 23. Medications Prescribed for Interventions at Clinic Visits**

<b>ICD-9 or Other Diagnostic Category</b>	<b>Vitamins</b>	<b>Antibiotics</b>	<b>Anti-inflamat</b>	<b>Anti-parasitic</b>	<b>Antacids</b>	<b>Fungicides</b>	<b>Cold</b>	<b>Other</b>	<b>Grand Total</b>
Infectious /Parasitic	278	371	253	2651	15	370	62	487	4,487
Respiratory	81	470	611	23	8	2	795	158	2,148
Symptoms & Signs	193	62	1243	17	239	2	211	130	2,097
Digestive	147	108	107	56	1465	4	7	153	2,047
Blood/Blood-forming	1566	1	40	3	6	0	0	16	1,632
Skin/Subcutaneous	35	330	59	10	2	50	32	450	968
Musculoskeletal	48	7	852	0	4	0	3	20	934
Nervous/Sensory	41	336	78	3	0	2	20	270	750
Endocrine/Nutritional	554	4	13	4	2	0	0	115	692
Genitourinary	29	267	95	5	1	46	0	27	470
Dental	31	20	390	0	0	0	0	9	450
Injury & Poisoning	15	92	82	0	0	0	7	70	266
Preventive Medicine	220	1	16	0	5	0	0	5	247
Pregnancy/Childbirth	163	5	10	0	7	0	0	6	191
Circulatory	19	3	60	0	0	0	0	97	179
Unknown	14	11	10	4	1	2	1	11	54
Neoplasms	10	13	26	0	0	0	0	3	52
Aftercare	4	37	23	1	1	1	1	7	75
Mental Disorders	3	0	16	0	1	0	0	1	21
Other	4	2	0	0	0	0	0	4	10
Congenital Anomalies	6	1	1	0	0	0	0	1	9
<b>Grand Total</b>	<b>3,461</b>	<b>2,141</b>	<b>3,985</b>	<b>2,777</b>	<b>1,757</b>	<b>479</b>	<b>1,139</b>	<b>2,040</b>	<b>17,779</b>

Medications for FH5 are shown in Table 24. Anti-inflammatory medications were the most widely-prescribed, and were given most often to patients suffering from injuries and musculoskeletal pain. "Other" medications also were frequently prescribed, most often for Digestive Diseases, where oral hydration salts were given to patients with diarrhea and gastroenteritis, and calamine and betadine were used for various skin irritations. The anti-parasitic medications that were prescribed for aftercare were prescription refills.

**Table 24. Medications Prescribed for Interventions at Fleet Hospital Visits**

<b>ICD-9 or Other Diagnostic Category</b>	<b>Vitamins</b>	<b>Antibiotics</b>	<b>Anti-inflammat</b>	<b>Anti-parasitic</b>	<b>Antacids</b>	<b>Fungicides</b>	<b>Cold</b>	<b>Other</b>	<b>Grand Total</b>
Respiratory	0	12	12	0	1	0	33	2	60
Injury & Poisoning	0	4	40	0	0	0	2	11	57
Musculoskeletal	0	0	36	0	0	0	0	7	43
Digestive	0	1	1	1	7	0	0	29	39
Infectious/Parasitic	0	0	6	7	0	7	3	6	29
Aftercare	0	3	4	16	1	0	1	3	28
Skin/Subcutaneous	0	5	1	0	0	2	1	15	24
Nervous/Sensory	0	6	1	0	0	0	2	2	11
Circulatory	0	0	1	0	0	0	0	5	6
Mental Disorders	0	0	4	0	0	0	0	2	6
Blood/Blood-forming	4	0	0	0	0	0	0	0	4
Endocrine/Nutritional	0	0	1	0	0	0	0	3	4
Genitourinary	0	1	0	0	0	1	0	2	4
Symptoms & Signs	0	1	2	0	0	0	0	0	3
Pregnancy/Childbirth	1	0	1	0	0	0	0	0	2
Neoplasms	0	0	1	0	0	0	0	0	1
<b>Grand Total</b>	<b>5</b>	<b>33</b>	<b>111</b>	<b>24</b>	<b>9</b>	<b>10</b>	<b>42</b>	<b>87</b>	<b>321</b>

## CONCLUSION

Medical planning is a complex process. To determine supply, equipment, skill, training, and personnel requirements for military medical operations, planners and logisticians project types and occurrence rates of injuries and illnesses likely to be encountered in a given scenario. One such scenario is the deployment of FH5 to Haiti on a humanitarian relief mission. Through the efforts of FH5 personnel to document every patient encounter during their deployment, a complete and extensive data set, including demographics, illness and injury frequencies, and the medications needed to treat them, has been collected. The resulting database, and the descriptive statistics that it generated, is a first step toward fulfilling the MRSP-2004 objective of preparing for and maintaining readiness for MOOTW.

Future areas of research for MOOTW medical planning should include the development of denominator data so that rates of occurrence for illnesses and injuries can be established for humanitarian relief as well as for other MOOTW scenarios. Comparisons between different types of MOOTW also will provide useful information. Specifically, baseline estimates of clinical capability requirements could be established for those parameters common to many scenarios, and variations might be defined for areas that are unique to particular types of MOOTW. For example, this study found that, in a humanitarian relief MOOTW, a large portion of the population are civilian children with diseases such as worms and scabies, and that anemia is prevalent among both children and adults. In contrast, previous studies of a peacekeeping MOOTW found that the field hospital in Zagreb, Croatia, served a mostly adult, military population who were treated most often for injuries, both combat and non-combat related, and for respiratory disorders.<sup>5,6</sup>

In a military deployment, there are four levels, or echelons, of medical care, ranging from Echelon I, battlefield care, to Echelon IV, definitive care. Echelon V provides convalescent care in the continental United States. The DEPMEDS model determines Echelon III and IV requirements,<sup>1</sup> and NHRC has developed a compatible model for Echelons I and II.<sup>7</sup> Both of these models link a patient condition to a list of medical tasks required to treat the condition at a given echelon. The supplies, skills, and time required to perform each task can be quantified, and a supply stream can be generated. Since MOOTW is a relatively recent trend that is likely to continue, it is important to account for patient conditions, as well as patient populations, that might differ from those of standard combat scenarios now found in military medical planning models.

Providing efficient and effective medical care, first, for the US military and second, for the target populations, is the goal of planners for MOOTW. Systematic research to determine baseline MOOTW requirements, as well as the unique medical requirements for humanitarian relief, peacekeeping, and disaster relief efforts will provide the data needed to achieve that goal. Further research will enable planners to use the data to establish an updated list of patient conditions, which are the basis for planning models such as DEPMEDS and the NHRC model.

### **ACKNOWLEDGEMENT**

The authors recognize and appreciate the efforts of personnel assigned to Fleet Hospital 5 to document every patient encounter during their Haiti deployment. The result of this endeavor is a complete and accurate database. In particular, the assistance of CAPT Dana Covey and LCDR Nancy Moya, who shared their firsthand information about the mission and provided guidance for this study, has been invaluable.

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**APPENDIX A**

**Data Collection and Coding Forms**

## FLEET HOSPITAL FIVE HUMANITARIAN ASSISTANCE VISIT RECORD

Location SIEBERT.Visit Date 05/09/92

Patient ID# \_\_\_\_\_

Name \_\_\_\_\_ Age 32 Sex FEMALE  
Last First M.I.☒ First visit for this condition \_\_\_\_\_ Follow-up visit for this condition☒ Outpatient \_\_\_\_\_ Inpatient \_\_\_\_\_ Surgery \_\_\_\_\_ Dental \_\_\_\_\_Chief Complaint: Abd Pain, Ab, Fever, General Malaise.

## DIAGNOSIS 1

URI.

## TREATMENT 1

\_\_\_\_\_

## DIAGNOSIS 2

\_\_\_\_\_

## TREATMENT 2

\_\_\_\_\_

## DIAGNOSIS 3

\_\_\_\_\_

## TREATMENT 3

\_\_\_\_\_

## DIAGNOSIS 4

\_\_\_\_\_

## TREATMENT 4

\_\_\_\_\_

Rx

Tylenol TAB PO TID prn for fever/painMVIRobafen TID prn QID.YES NO This patient will be admitted within 24 hours.\_\_\_\_\_  
Clinician



## NHRC Abbreviated Clinical Record

The information you enter on this form will be used in studies of Patient Conditions and the incidence of diagnoses in Medical Operations Other Than War. There are four sections. The first, directly below, contains patient identification information. The other three on subsequent pages relate to the nature of the patient visit. There is one page each for Outpatient (field) contacts, Admissions, and Operations/Surgical contacts.

The form assumes that providers have a method at their disposal for identifying individual patients by some unique numeric ID and that contacts are dated. Relatedly, it assumes that distinctions are made between (and kept track of) "first contacts" and "follow-up contacts" for any given condition.

As with any incidence study, this latter distinction is very important to the NHRC.

We thank you in advance for your assistance.

Is this the first contact FH5 has had with this patient? ☐ Y ☒ N ☐ Unknown

Refers to first FH6 contact for ANY condition

Patient Sex ☐ M ☒ F

Last Name _____	SSN _____
First Name _____	Other ID# _____
M Initial _____	DOB ____/____/____ (year at last)

Patient Currently a Citizen of \_\_\_\_\_ (write name of patient's country of residence)

Military ☐ Enlisted ☐ Officer Service Branch \_\_\_\_\_ Corps \_\_\_\_\_ Grade \_\_\_\_\_

Or  
Civilian ☐ UN Employee ☐ Other

- 
- ☒ This is an Outpatient Contact (Go to 'Outpatient Visit Record' - Page 2)  
☐ This is an Admission Contact (Go to 'Admission Record' - Page 3)  
☐ This is a Surgery Contact (Go to 'Surgery Record' - Page 4)

## OUTPATIENT (FIELD) VISIT RECORD (#2)

Is this a first contact with FH5 (for this condition, by this patient) or a follow-up to a previous visit?

☐ First visit for this condition  
☐ Follow-up for this condition

Clinic= ☒ ER ☐ Orthopedics/Surgical ☐ Dental ☐ HA

Visit Date 05/17/97  
 Time 09:00 AM PM

Smokes

☐ Y ☒ N ☐ Unknown  
☐ Y ☒ N ☐ Unknown  
☐ Y ☒ N ☐ Unknown

Reason patient is here (Chief Complaint) UMBILICAL HERNIA

Accident ☒ Y ☒ N ☐ Unknown. If yes, was it (circle one):

MVA Sports Occupational Violence Fall Other Unknown

Diagnosis 1

UMBILICAL HERNIA

Treatment 1

SCHEDULE SURGERY  
23 MAY 97

Diagnosis 2

Treatment 2

Diagnosis 3

Treatment 3

Diagnosis 4

Treatment 4

This condition is a battle injury

☐ Y ☒ N ☐ U

This condition is a major injury

☐ Y ☒ N ☐ U

This is an eye injury

☐ Y ☒ N ☐ U

This injury is alcohol-related

☐ Y ☒ N ☐ U

[GSW Mine Artillery Other Unknown]

☐ YES ☒ NO This patient will be admitted within 24 Hrs

# Haiti Data Coding Sheet

1. ID: _____	2. SITE _____	3. DATE (M/D) _____	4. AGE (MO): _____	5. AGE (YR) _____	6. SEX: M F U	7. VISIT I F U	8. MIL/CIV M C U	9. CITIZEN OF. HAI OTH _____
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10. ICD9-1		11. DX-1					
AC	aftercare	ACOT	WNDC	DRCH	SUTR	MEDR	
PM	prev med	PMOT	MALP	IMMZ	MVIT	WLBB	
BL	blood dis	BLOT	ANEM				
CR	circ sys	CROT	HYPR				
CA	cong anom	CAOT					
DG	digest sys	DGOT	DIAR	GAST	GAEN	GERD	HERN
EN	endo/nutr	ENOT	DHYD	MLNU			INDG
GU	genito/ur	GUOT	UTIF				
IN	infec/para	INOT	HIVP	MLRA	PARA	SCAB	TBLS
			VGEX	VRLS	WORM		TNEA
DN	dental	DNOT	CLEN	GUMD	TDCY	FILL	DENT
IP	inj/pois	IPOT	BITE	FRAX	LCAB	SPST	STIW
MS	muscle/conn	MSOT	ARTH	CCHS	OSMY	BKPN	PAIN
NP	neoplasm	NPOT					
MD	mental dis	MDOT					
EE	nerv sys	EEOT	CTCT	CNVJ	OTMD	OTEX	
PC	preg/child	PCOT					
RS	resp sys	RSOT	BRON	PHAR	PNEU	SNUS	URIF
SS	signs/symp	SSOT	COFF	FVUO	HDAK	HRTB	ABPN
SK	skin/sub	SKOT	ABSC	CLLL	DERM	ECZM	INFU
OT	other						RASH
UK	unknown						

12. TX PROCEDURE-1 a. _____ b. _____ c. _____	13. TX APPLICATION-1 0 1 2 3 4 5 6 7 8 9	14. TX MEDS-1 a. _____ b. _____ c. _____	15. TX REFERRAL-1 0 1 9
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16. ICD9-2		17. DX-2					
AC	aftercare	ACOT	WNDC	DRCH	SUTR	MEDR	
PM	prev med	PMOT	MALP	IMMZ	MVIT	WLBB	
BL	blood dis	BLOT	ANEM				
CR	circ sys	CROT	HYPR				
CA	cong anom	CAOT					
DG	digest sys	DGOT	DIAR	GAST	GAEN	GERD	HERN
EN	endo/nutr	ENOT	DHYD	MLNU			INDG
GU	genito/ur	GUOT	UTIF				
IN	infec/para	INOT	HIVP	MLRA	PARA	SCAB	TBLS
			VGEX	VRLS	WORM		TNEA
DN	dental	DNOT	CLEN	GUMD	TDCY	FILL	DENT
IP	inj/pois	IPOT	BITE	FRAX	LCAB	SPST	STIW
MS	muscle/conn	MSOT	ARTH	CCHS	OSMY	BKPN	PAIN
NP	neoplasm	NPOT					
MD	mental dis	MDOT					
EE	nerv sys	EEOT	CTCT	CNVJ	OTMD	OTEX	
PC	preg/child	PCOT					
RS	resp sys	RSOT	BRON	PHAR	PNEU	SNUS	URIF
SS	signs/symp	SSOT	COFF	FVUO	HDAK	HRTB	ABPN
SK	skin/sub	SKOT	ABSC	CLLL	DERM	ECZM	INFU
OT	other						RASH
UK	unknown						

18. TX PROCEDURE-2 a. _____ b. _____ c. _____	19. TX APPLICATION-2 0 1 2 3 4 5 6 7 8 9	20. TX MEDS-2 a. _____ b. _____ c. _____	21. TX REFERRAL-2 0 1 9
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**APPENDIX B**  
**Medication Coding Chart**

**Coding Chart for Medications**

<b>1</b> <b>Vitamins &amp; Minerals</b>	<b>2</b> <b>Antibiotics</b>	<b>3</b> <b>Pain/Fever</b>	<b>4</b> <b>Other</b>	<b>5</b> <b>Antiparasitics/ Antimalarials</b>	<b>6</b> <b>Antacids</b>	<b>7</b> <b>Antifungals</b>	<b>8</b> <b>Cold/Cough/ Allergy</b>
B12-cyanocobalamin	Amoxil	Aspirin (ASA)	Acyclovir	Chloroquine	Axid	Diflucan	Benadryl
Iron	Amoxicillin	Ibuprofen	Betadine	Elimite Cream	Cimetidine	Gynelotrimin	Bromanate
Magnesium	Ancef	Indocin	Calamine	Eurax Cream	Maalox	Lotrimin	Cepacol
Multivitamin	Augmentin	Indomethacin	Dilantin	Flagyl	Mylanta	Mycelex	Dimetapp
Pediatric Vit.	Bactrim	Ketorolac	Lasix	Kwell	Pepcid	Mycostatin	Robitussin
Polyvitamins	Biaxin	Motrin	Lomotil	Lindane	Tagamet	Nizoral	Rofren Elixir
Prenatal	Cephalexin	Naprosyn	Ocutears	Mebendazole		Nystatin	
	Cephazolin	Tylenol	Oral Hydration Salts	Metronidazole		Triacet Cream	
	Sodium						
	Ceftriaxone	NSAID du jour	Pedialyte	Pinex		Triamcinolone Acetonide	
	Sodium						
	Dicloxacillin		Podophyllin	Piperzine			
	Erythromycin			Vermox			
	Garamycin						
	Gentamycin						
	Griseofulvin						
	Keflex						
	Penicillin (Pen)						
	Rocephin						
	Zithromax						

<b>REPORT DOCUMENTATION PAGE</b>			Form Approved OMB No. 0704-0188	
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12. ABSTRACT (Maximum 200 words) Military planners determine medical requirements by projecting the number of casualties expected in a combat scenario. A recent shift in US military policy has resulted in an increase in military operations other than war (MOOTW); therefore, it is important to update military medical planning tools to account for MOOTW such as humanitarian assistance, peacekeeping, and disaster relief. This report describes the patient demographics, type of medical encounter, diagnoses, and medications provided by medical personnel of Fleet Hospital 5 (FH5) in community clinics that provided humanitarian relief to Haitian civilians, and at the FH5 treatment facility, where US and United Nations military personnel were treated during a humanitarian relief operation in Haiti. These data formed a database consisting of 10,568 records, each representing one patient encounter. The 10,215 clinic patients were seen at 22 sites between April 4 and August 5, 1997. Almost two-thirds (61.6%) were women, and children aged 1 to 10 years comprised the largest age category. Additionally, 353 patients were treated at FH5 during the same period. A majority of patients (81%) were men; those aged 21 to 50 years were seen most often. Medical diagnoses were the most frequent type of patient encounter, representing 92.6% of clinic visits and 92.2% of FH5 visits. Infectious and parasitic diseases were diagnosed in one of every four clinic visits. At FH5, injury and poisoning diagnoses were the most frequent (23.1%).				
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